| Help | Logout | Interrupt |

| Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers | Preferences | Cases |

Search Results -

Terms	Documents
L2 and ((market$) with (instance or event or action))	2

Database:

- US Patents Full-Text Database
- US Pre-Grant Publication Full-Text Database
- JPO Abstracts Database
- EPO Abstracts Database
- Derwent World Patents Index
- IBM Technical Disclosure Bulletins

Search: L6

Refine Search

Recall Text | Clear

Search History

DATE: Tuesday, October 15, 2002   Printable Copy   Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=USPT; THES=ASSIGNEE; PLUR=YES; OP=OR		
L6	L2 and ((market$) with (instance or event or action))	2	L6
L5	L2 and ((user$ or client) with (instance or event or action))	3	L5
L4	L2 and (client with (instance or event or action))	0	L4
L3	L2 and database	3	L3
L2	5559313.pn. or 5682482.pn. or 5604899.pn. or 5636117.pn. 5559313.pn. or 5630127.pn.	5	L2
L1	6044363.pn.	1	L1

END OF SEARCH HISTORY

L5: Entry 3 of 3   File: USPT   Feb 18, 1997

DOCUMENT-IDENTIFIER: US 5604899 A
TITLE: Data relationships processor with unlimited expansion capability

US PATENT NO. (1):
5604899

Detailed Description Text (113):
After termination, the results of the inquiry loop are fed through signal bus 911 to
an abbreviated results compiling means 915 which orders the results according to
their level number and interrelation. By way of example, a first Level-2 inquiry may
produce intermediate answer, Ei-2a. That intermediate answer together with its
forward-connecting relation (RTN.sub.2) may produce a plurality of intermediate
answers at Level-3, namely, Ei-32a.1, Ei-32a.2, etc. Each of these Level-3 answers
may then result in a larger plurality of Level-4 answers (not shown) and so forth.
Likewise the Level-2 answer Ei-2b may produce a plurality of Level-3 answers,
Ei-32b.1, Ei-32b.2, Ei-32b.3, etc. Each of these answers is recorded as a paired set
of an entity class number ETN and an entity instance number EiN. The abbreviated
results are then expanded into user-understandable results by sending an entity type
number signal, sETN.sub.x to the entity definition means 950 and a corresponding
entity instance signal, sEiN to the entity storage means 920. In response the entity
storage means 920 then produces detailed information from the referenced entity
instances tables. Often, the database user may not wish to see all of the detailed
information within a row, but rather wishes to see only prespecified columns of the
referenced row and wishes the data to be displayed according to a predetermined
display format. The details filter 985 filters out information from undesired
columns and orders the remaining data according to a predetermined display format
selected by the user. The desired "real" information then appears in the selected
format on display means 990.

Detailed Description Text (114):
Referring to FIG. 10, it will now be explained how a single starting instance can
lead to the production of a large plurality of answers. A database user has a first
account number (instance I.sub.a/E1) from which the user wishes to find all persons,
groups or companies which are holders of that account, and once known, all other
accounts held by those persons, groups or companies; and further, where a person is
a member of a group or a group has many persons as its members or where a company
has subsidiary companies, the accounts held by these entities. As shown in FIG. 10,
the relationship instance I.sub.a/R1, has three tails, T1, T2 and T3, only one of
which will be active for a given instance of the head entity I.sub.a/E1. Tail T1
points to person instance I.sub.b/E2. Tail T2 points to group instance I.sub.b/E3.
Tail T3 points to company instance I.sub.b/E4. These instances of person, group and
company represent intermediate instances which lead to the desired answer, namely,
the accounts held by such persons. One person I.sub.b/E2, may hold many other
accounts as indicated by the multiple instances of the 's Holder relationship
instances, I.sub.i/R1, I.sub.j/R1, I.sub.k/R1, etc. Each of these relationship
instances has a corresponding account instance at its head (H) end. In FIG. 10,
these are I.sub.i/E1, I.sub.j/E1, I.sub.k/E1, etc. The rest of FIG. 10 is
self-explanatory. A person can belong to several groups and each of those groups may
hold several accounts. A group may have many members and each of those members may
have several accounts. A company may be a subsidiary of many other companies and
each of those companies can hold several accounts. Thus, the list of ending
instances shown in FIG. 10, I.sub.i,j,k/E1 -I.sub.x,y,z/E1, can be quite long
compared to the starting instance I.sub.a/E1 which started the inquiry.

DOCUMENT-IDENTIFIER: US 5630127 A
TITLE: Program storage device and computer program product for managing an event driven management information system with rule-based application structure stored in a relational database

US PATENT NO. (1):
5630127

Detailed Description Text (171):
The first step is to look up the appropriate risk type identification rules for the event based on product types and other user defined criteria. Using these rules the risk types affected are determined and a separate exposure amount is created for each risk type. The results of these calculations are updated on the exposure database.

Detailed Description Text (183):
Datastore containing recurring and one-time events whose sources include user input, calendar triggers, market movement, revaluation of accounts notices (e.g., Mark-to-Market events) and CMIS transaction event triggers. Processes periodically examine this queue to complete calculations initiated by others.

Detailed Description Text (199):
A set of user defined rules that define the risk types whose exposure values will be updated by a particular CMIS event, the calculation to determine the exposure value and the object data required to calculate the exposure.

Detailed Description Text (217):
Exposure report events triggered by an exposure calculation, a user query request and/or calendar event that meets the rule instance to automatically execute the exposure reporting process.

Detailed Description Text (219):
User defined rules used describing the format and event triggers to automatically initiate reporting of exposure data.

Detailed Description Text (240):
Datastore containing recurring and one-time events whose sources include user input, calendar triggers, market movement, revaluation of accounts notices (e.g., Mark-to-Market events) and CMIS transaction event triggers. Processes periodically examine this queue to complete Calculations initiated by others.

Detailed Description Text (252):
User defined risk reporting rules which specify the data, format and event triggers to automatically produce risk reports.

Detailed Description Text (318):
This process receives the results of queries/reports from the primary node, presents them to users, and stores the object instance data to the local database for Risk Analysis. Other activities can also be received from the host, including messages from other users, and messages from behavior rule (e.g., limit) processing.

Detailed Description Text (320):
Risk analysis allows business users to execute queries/reports against instance data received from the primary node after a query/report execution. The user can change object instance values to perform "what if" analysis.

Detailed Description Text (326):
The Object Instance entity on the primary node stores all the values retrieved and calculated during the execution of queries/reports. These values are sent, through activity management, to the secondary nodes where the queries/reports were requested, and stored in this entity. Users can use these object instance values in performing risk and other "what if" analysis by changing the object instance values and running local queries/reports.

Detailed Description Text (328):
CMIS data entered by GRMS_users to add, modify or delete user accessibly CMIS data (Includes GRM manually initiated events).

Detailed Description Text (342):
Data sent from the primary node to a secondary node including report output, object instance data for risk analysis, and message data from their users or from behavior rule (limit) processing.

Detailed Description Text (368):
The GRMS system is designed to respond to messages. Messages may come through CMIS (external system feeds, market data feeds), from users (queries and reports), or from scheduled events in the Event Calendar (automatic reports, behavior rules, historical risk calculations). Whatever the source of the message, these messages are stored in the GRMS Queue entity. The Message Routing Rule is used to help identify, based on the message id, how to construct the key into the Message To Object entity. Based on the Message ID and constructed key, the Message to Object entity is examined to find an Object. This Object is related to a Module through the Object To Module entity. This Module is then executed.

Detailed Description Text (369):
Exposure calculations are triggered by messages from operational systems and user requested events. The message is stored in the GRMS Queue. Based on the life cycle states defined in the Message to Object entity, and Object is found, which is related to a Module (through the Object To Module entity). This Module is executed to respond to this message.

Detailed Description Text (372):
Processing for queries and reports are triggered by an Event calendar message or a request from a business_user. The message is stored in the GRMS Queue which is related to a Module (through the Object To Module entity). When executed, this Module will aggregate the appropriate exposure or probable loss and return it to the limit processor. If this limit has been exceeded, a message will be sent to a set of Employees indicating that a behavior rule has been violated.

Detailed Description Text (456):
--Relationship Type: USER DEFINED FACILITY.Identifies.Obj Instance

Detailed Description Text (457):
Relates object instances to USER DEFINED portion of CMIM key.

DOCUMENT-IDENTIFIER: US 5636117 A
TITLE: Method and apparatus for monitoring the strength of a real estate market or commodity market and making lending and insurance decisions therefrom

US PATENT NO. (1):
5636117

Abstract Text (1):
By gathering information regarding the total number of sales, total number of pending listings, total number of active listings, and total number of expired listings in a time period, a market index may be derived. This market index can then be charted over a plurality of periods, giving an indication of any temporal trends. The market index can further be used to guide and determine the action of a service provider such as a lender or title insurance company in a proposed real estate transaction.

Detailed Description Text (3):
At box 11, a time period is chosen, over which the analysis is to be accomplished. The period can be defined as the length of time over which sales activity is to be measured; the period may be chosen to be any length of time. During normal residential real estate market activity, the compilation period typically would be one year with the market index $M.sub.i$ calculated each month based on data gathered over the past twelve months. The time period between calculation of $M.sub.i$ may be longer. Alternatively, if desired, for instance during market volatility, compilations may be made more frequently, for example semiannually, biweekly, weekly or even daily.

Detailed Description Text (26):
Further, as shown in FIG. 3, to facilitate determining the market indices, $M.sub.1$, a commercially available calculator or computer having a central processing unit 30 may be used, and the resulting calculations stored in an electronic memory device 32, for instance on a floppy disk, "hard disk", punch tape or cards, all of which are standard articles of commerce. The resulting calculations may be displayed on a visual output device 34, such as a commercially available LCD or LED display or printed or plotted on paper with a commercially available printer/plotter 36. Moreover, the data used in determining $M.sub.i$ may be also stored in an electronic memory device 38 of the types discussed above.

DOCUMENT-IDENTIFIER: US 5630127 A
TITLE: Program storage device and computer program product for managing an event driven management information system with rule-based application structure stored in a relational database

US PATENT NO. (1):
5630127

Detailed Description Text (33):
The GRMS calendar function has the ability to store event messages. Each message will have time and date parameters associated with it. When that time and date occurs, the calendar function will initiate at the event message. GRMS 108 will process the event message and utilize the rules that are stored for that event. The events triggered by such a message could include a mark-to-market activity after an exchange closing, generation of a report for the individual accounting, or an initiation of a query outside of the GRMS system 108 to a market information provider. These events will flow through the GRMS system 108 in the same manner as all other events and utilize the rule concept.

Detailed Description Text (132):
The components of GRMS application architecture include: GRMS Event Processor, Bank Operations Interface, Marketing

Detailed Description Text (135):
The GRMS Event Processor is driven by several kinds of events from external and internal sources. From sources external to GRMS, it receives business and market event messages from the CMIS external system feeds component and processes them according to the product life cycle definitions. These events communicate to GRMS that new information has been updated on the CMIS databases (such as movements in product balances) that necessitates the recalculation of exposure. Within GRMS, the Event Processor receives events from other components, event calculators and processors, or from the Event Calendar. The Event Calendar is a service element that accepts requests for time-triggered events and generates these events at the appropriate time. These internal events, mainly report and query requests, and behavior rules checking requests, are processed and can cause GRMS calculations to occur and data to be queued to business professionals.

Detailed Description Text (183):
Datastore containing recurring and one-time events whose sources include user input, calendar triggers, market movement, revaluation of accounts notices (e.g., Mark-to-Market events) and CMIS transaction event triggers. Processes periodically examine this queue to complete calculations initiated by others.

Detailed Description Text (240):
Datastore containing recurring and one-time events whose sources include user input, calendar triggers, market movement, revaluation of accounts notices (e.g., Mark-to-Market events) and CMIS transaction event triggers. Processes periodically examine this queue to complete Calculations initiated by others.

Detailed Description Text (368):
The GRMS system is designed to respond to messages. Messages may come through CMIS (external system feeds, market data feeds), from users (queries and reports), or from scheduled events in the Event Calendar (automatic reports, behavior rules, historical risk calculations). Whatever the source of the message, these messages

are stored in the GRMS Queue entity. The Message Routing Rule is used to help identify, based on the message id, how to construct the key into the Message To Object entity. Based on the Message ID and constructed key, the Message to Object entity is examined to find an Object. This Object is related to a Module through the Object To Module entity. This Module is then executed.

Detailed Description Text (446):
--Relationship Type: MARKET SEGMENT.Identifies.Obj Instance

Detailed Description Text (447):
Relates object instances to MARKET SEGMENT portion of CMIM key.

DOCUMENT-IDENTIFIER: US 5682482 A
TITLE: Facilitating the supplying of services in a network

US PATENT NO. (1):
5682482

Detailed Description Text (4):
Essential to the present invention is an operations gateway 50 that interfaces with
the networks 18-30 and the support systems 14. The operations gateway 50 responds to
a predetermined protocol in taking responsibility for functions that need to be
accomplished in order to support the providing of services by the network 10. The
operations gateway 50 receives information and/or data from the network 10 that
enable it to respond in a manner that results in the accomplishment of the desired
functions. These functions include, for example, managing relationships between
service providers and service users, fulfilling service instances, determining an
amount to be billed for a specific service instance and crediting and/or debiting an
account related to a particular service instance. The accomplishment of these
functions is achieved primarily by means of the financial transaction system 32 and
other agent and network systems. It should be appreciated, however, that these are
only representative functions for the system 32 and further and/or other appropriate
functions can be accomplished by the system 32, as well as further and/or other
functions appropriate to systems 36-44.

Detailed Description Text (6):
With respect to achieving the communication that is required for the agent interface
58 and its associated agents 54 in conjunction with taking on the responsibility for
accomplishing the functions, messages are sent or inputted to the agent interface 58
by message senders. Each message includes common information. In particular, each
message can be defined as including a number of informational elements that include
data and/or other information useful in implementing the functions. In the context
of financial transaction related functions, such informational elements may include
service request information, service instance request information and connection
request information that relate to a service to be supplied by a provider to a user
and how a particular service instance is to be charged. Other informational elements
may contain booking data describing a particular booking to be used for a user or a
provider, fulfillment agent data describing a fulfillment agent to be used for
fulfilling a request, charging agent data describing a charging agent to be used in
charging an amount associated with a request, description data describing a
particular request and/or accounting rules used in determining an amount to charge.
Informational elements that are more general or more common among a plurality of
messages include: an identification of a user of a particular service, an
identification of a provider of the particular service, a type of information that
is related to the particular service, such as a voice communication service or a
video on demand service, and a session.sub.-- id that describes the particular
service, such as the providing of an identified movie.

Detailed Description Text (14):
A service instance layer defines an information model for management of a particular
service to a user and requests network connections to provide the particular
service. This relates to a particular service instance that is in use, e.g.,
delivery of a specific movie, playing a game, an interaction on home shopping.

Detailed Description Text (22):
BA: booking agent--responsible for financial transfers relative to users and
providers for services, service instances, network connections or network

connection.sub.-- instances (depending upon network layer)

Detailed Description Text (26):
Service.sub.-- user--a specialized description of a particular user used by service and service instance layer agents which includes, for example, a profile of the user for purposes of service control.

Detailed Description Text (27):
Connection.sub.-- user--a specialized description of a particular user used by connection and connection instance layer agents.

Detailed Description Text (33):
Service.sub.-- instance.sub.-- request--a specialization of request used by agents in the service instance layer and may include one or more of the following: service.sub.-- instance.sub.-- user.sub.-- booking, service.sub.-- instance.sub.-- provider.sub.-- booking, service.sub.-- instance.sub.-- fa (fulfillment agent), service.sub.-- instance.sub.-- ca (charging agent), service.sub.-- instance.sub.-- description, service.sub.-- instance.sub.-- accounting.sub.-- rules.

Detailed Description Text (46):
With respect to the relevant paths for providing the service, FIG. 3A illustrates a service layer 100 with a number of agents 54 associated therewith including: a management agent 104 for the service layer (MA.sub.s); a fulfillment agent 108 for the service layer (FA.sub.s); and a charging agent 112 for the service layer (CA.sub.s). FIG. 3A also identifies message paths for sending requests to agents, namely: path 1 to MA.sub.s 104 from a user, which request may emanate from a network system 70, for example. In connection with describing what occurs, a message connotation is provided associated with path 1, namely: 1) service.sub.-- req (session.sub.-- id, user, provider, service.sub.-- request). In accordance with this message representation, the term "service.sub.-- req" represents a message label and the terms within the parentheses identify the informational elements that contain data or other information. In particular, a request is made from a user for a service request. The "user" informational element identifies the user of the service. The "provider" identifies a provider and is optional information. The "session.sub.-- id" describes the service being requested by the user. The MA.sub.s 104 manages the relationship between the service user and the service provider. It takes responsibility for invoking the fulfillment agent (FA.sub.s) 108 and the charging agent (CA.sub.s) 112 in the service layer 100. With regard to invoking the charging agent in the service layer 100, the MA.sub.s 104 takes responsibility for sending a message along path 1.1 to the charging agent 112, with the message being defined as: 1.1) charging.sub.-- transaction.sub.-- req (session.sub.-- id, user, service.sub.-- request). This message label indicates that a financial transaction is being requested for the service over the network 10. This charging agent CA.sub.s 112 is responsible for determining the parameters associated with the particular service instance. The particular service to be provided is described in the session.sub.-- id and the identity of the user for the service is also provided in the message. The CA.sub.s 112 takes responsibility for specifying how often an accounting must be made for the fulfillment taking place in the service layer 100. This is done in accordance with message path 1.2, namely: 1.2) charging.sub.-- transaction.sub.-- ack (session.sub.-- id, service.sub.-- request). In this message, the service.sub.-- request includes service.sub.-- request.sub.-- accounting.sub.-- rules, which specifies how often an accounting for this fulfillment must be made, e.g., upon completion, periodically (time or service unit based) and resource units required for rating by this CA.sub.s 112. The informational element service.sub.-- request also includes a service.sub.-- request.sub.-- service.sub.-- ca that specifies the particular charging agent to be used for the service instance requested by the user. The MA.sub.s 104 also selects the particular fulfillment agent 108, typically based on a service profile generated as a function of at least the identity of the user, the particular service request and, optionally, the identity of a provider. With respect to path 2, the message can be characterized as: 2) service-req (session.sub.-- id, service.sub.-- user, service.sub.-- request). This message label indicates that a service request is sent to the fulfillment agent 108 denoted by service.sub.-- fa informational element of the service.sub.-- request, by the management agent 104 for the identified service.sub.-- user, with the particular service session.sub.-- id being described. Similarly, the particular charging agent 112 associated with the service.sub.-- request is denoted using the service.sub.-- ca informational element. In the case of FIG. 3A, the FA.sub.s 108 represents and is responsible for handling the service instance that is to be used and which is associated with the general category of the service, such as video on

demand.

Detailed Description Text (47):
Referring to FIG. 3B, path 3 indicates the next step that is conducted for which the fulfillment agent 108 takes responsibility, namely: 3) service.sub.-- instance.sub.-- req (session.sub.-- id, service.sub.-- user, service.sub.-- instance.sub.-- request). This message indicates that the FA.sub.s 108 has sent a message to the appropriate or selected management agent (MA.sub.si) 116 of the service instance layer 120. The service instance MA.sub.si 116 takes responsibility for managing the financial transaction and fulfillment of the particular service instance. In that regard, a message path 4 is provided, namely: 4) charging.sub.-- transaction.sub.-- req (session.sub.-- id, service.sub.-- user, service.sub.-- instance.sub.-- request). In accordance with this message, a financial transaction is initiated. The particular charging agent 124 is identified by a service.sub.-- instance.sub.-- ca informational element, which is part of the service.sub.-- instance.sub.-- request. In addition, part of the service.sub.-- instance.sub.-- request includes a service.sub.-- instance.sub.-- user.sub.-- booking informational element that identifies a booking agent to be used and also provides booking information, e.g., is a credit check required before this particular service instance delivery. As before, service.sub.-- user will identify the particular service user and the session.sub.-- id will describe this particular current session related to providing of this service instance. With regard to such a credit check, path 5 provides a message generated using the charging agent 124 to an appropriate or selected booking agent (BA.sub.si) 128 associated with the service instance layer 120. The message along this path is defined as: 5) check.sub.-- credit (session.sub.-- id, service.sub.-- user, service.sub.-- instance.sub.-- amount). In accordance with this message, the BA.sub.si 128 checks the user's credit using the information found in the service.sub.-- user informational element based on the data in the informational element service.sub.-- instance.sub.-- amount. The associated or underlying agent system(s) 66 actually perform(s) the function(s) for checking credit. If satisfactory, the available credit is decremented in accordance with the data or amount set forth in the designated informational element. In accordance with path 6, the BA.sub.si 128 sends a message to CA.sub.si 124 acknowledging the credit check and which message is defined as: 6) check.sub.-- credit.sub.-- ack (session.sub.-- id). Next, the CA.sub.si 124 takes responsibility for charging for the fulfillment of the particular service instance, namely: 7) charging.sub.-- transaction.sub.-- ack (session.sub.-- id, service.sub.-- instance.sub.-- request). In accordance with this message, the service.sub.-- instance.sub.-- request informational element includes information and/or data associated with service.sub.-- instance.sub.-- accounting.sub.-- rules, which specify, for example, the rules or algorithm to financially account for the fulfillment accomplished in connection with the particular service instance. For example, the agent 124 takes responsibility for associating with one or more appropriate or selected agent systems 66 that periodically (time or service unit based) account for the service instance and take into account the resource units that might be required for any necessary charging function. In that regard, the resource units may be expressed in a general way so that the accounting rules need not be limited to a particular fulfillment agent.

Detailed Description Text (48):
Continuing with reference to FIG. 3B, in fulfilling the particular service instance, message path 8 is next described: 8) service.sub.-- instance.sub.-- req (session.sub.-- id, service.sub.-- user, service.sub.-- instance.sub.-- request). Along this path, a service instance request using MA.sub.si 116 is made of fulfillment agent 132 (FA.sub.si) of the service instance layer 120. Similar to the fulfillment agent 108 of the service layer 100, the FA.sub.si 132 takes responsibility for fulfilling a particular service instance. More specifically, as seen in FIG. 3C, the FA.sub.si takes responsibility for initiating a network connection request to a connection layer 130. Generally, the connection layer 130 models the "static" information in the network 10 as it relates to relationships between users and providers of services and relationships between users and communication or other service-related networks, which are part of the network 10. Such relationship information includes the identity of known customers, the identity of such communication or other service-related networks that the users have access to, what services might be available using such communications or other service-related networks and any charges that exist for having access to each of such communications or other service-related networks. For example, the connection layer 130 defines a relationship between a telephone carrier and a telephone user indicating that the particular user has access to a particular telephone

communications network. A periodic charge for maintaining this relationship or "static connection" may be required, such as an amount due monthly, regardless of telephone usage.

Detailed Description Text (49):
Continuing with the description in the connection layer 130 for this general example, the FA.sub.si 132 takes responsibility for sending necessary messages to initiate one or more network connections that are required to deliver the particular requested service, i.e., takes care of establishing physical connections to and/or among one or more of the necessary communication or other service-related networks required to deliver the particular service. In the general example, two different network connections are represented. With reference to FIG. 3C, the FA.sub.si 132 takes responsibility for a message along path 9.1 to management agent (MA.sub.c) 184 in the connection layer 130. This message is defined as: 9.1) connection.sub.-- req (session.sub.-- id, connection.sub.-- user, connection.sub.-- request). In accordance with this message, the FA.sub.si 132 initiates a first network connection request to an appropriate and selected management agent for the connection layer 130. In so doing, a connection request message is provided that describes the current session and identifies the connection user that requires the connection of this particular communications or other service-related network. The MA.sub.c 184 is responsible for ensuring that charging and fulfillment agents are specified in order to provide the particular service instance and use the necessary connections associated with the connection layer 130. Similarly, for a second connection that is required for the particular service instance in the connection layer 130, message path 9.1' is utilized, namely: connection.sub.-- req (session.sub.-- id, connection.sub.-- user, connection.sub.-- req). This message indicates that the FA.sub.si 132 has initiated a second connection request for delivering this particular service. This request is sent to another management agent MA.sub.c 192 of the connection layer 130.

Detailed Description Text (50):
With respect to the first connection request, the MA.sub.c 184 takes responsibility for selecting an appropriate charging agent in the connection layer 130, which is done along message path 9.2, namely: 9.2) charging.sub.-- transaction.sub.-- req (session.sub.-- id, connection.sub.-- user, connection.sub.-- request). This message is sent to the charging agent (CA.sub.c) 198 of the connection layer 130. The CA.sub.c 198 represents the financial relationship between the service-instance provider (in this case, the user of this network connection in the connection layer 130) and the network provider (in this case, the provider of this network connection in the connection layer 130). The message to the CA.sub.c 198 results in a financial transaction for this first network connection to be established over the particular communications or other service-related network that is being requested. The CA.sub.c 198 is involved with determining parameters associated with the specific or "dynamic" connections that are to be established (connection.sub.-- instances) in order to provide the particular service instance.

Detailed Description Text (56):
The message initiated by the MA.sub.c 192 along path 9.2' is directed to the connection to be established over the particular communications or other service-related network that is requested. The agent receiving this message is another charging agent (CA.sub.c) 194 for the connection layer 130. The CA.sub.c 194 is responsible for determining the parameters associated with the dynamic connections to be set up for using this particular communications or other service-related network. The CA.sub.c 194 is also responsible for a message along path 9.3' to MA.sub.c 192 relating to the accounting for the fulfillment of the functions required in the connection layer 130, as applied to this second network connection. With respect to fulfillment of this second network connection, the message along path 9.4' is received by the fulfillment agent (FA.sub.c) 196 of the connection layer 130, which message relates to the use of the communications or other service-related network required for this second connection in order to provide this particular service instance requested by a user.

Detailed Description Text (57):
With regard to fulfilling the particular network connections requested of the FA.sub.c 186 and FA.sub.c 196, reference is made to FIG. 3D. Specifically, FA.sub.c 186 initiates a message from the connection layer 130 to the connection instance layer 140 along path 9.5 to the management agent (MA.sub.ci) 136. This message is defined as: 9.5) connection.sub.-- instance.sub.-- req (session.sub.-- id, connection.sub.-- user, connection.sub.-- instance.sub.-- request). In accordance

with this message, the MA.sub.c 186 initiates a first network connection.sub.-- instance request to an appropriate and selected management agent for connection instance layer 140. In so doing, a connection.sub.-- instance request message is provided that describes the current session and identifies the connection.sub.-- user that is in need of the particular network connection. Similarly, where a second network connection is required for the particular service instance, a message path 9.5' is defined, namely: 9.5') connection.sub.-- instance-sub.-- req-(session.sub.-- id, connection.sub.-- user, connection.sub.-- instance.sub.-- request). This indicates that the FA.sub.c 196 has initiated a second network connection.sub.-- instance request that is required to deliver the particular service. This request is sent to another management agent (MA.sub.ci) 144 of the connection instance layer 140. These two messages initiate the dynamic connections that must occur in the connection instance layer 140 in order to deliver the particular service. For example, in the particular communications or other service-related network that has been designated to assist in providing the service, certain connections must be made.

Detailed Description Text (58):
With respect to the first network connection.sub.-- instance, the MA.sub.ci 136 manages the fulfilling and charging for this particular network connection along a path denoted as: 10) charging.sub.-- transaction.sub.-- req (session.sub.-- id, connection.sub.-- user, connection.sub.-- instance.sub.-- request). In accordance with this message, the MA.sub.ci 136 is involved with determining the appropriate charging agent of the connection instance layer 140 associated with this particular network connection, namely, charging agent (CA.sub.ci) 148. The MA.sub.ci 136 determines the appropriate CA.sub.ci 148 since the CA.sub.ci 148 may need fulfillment agent specific information to rate the resources used by the selected fulfillment agent, which takes responsibility for accomplishing this network connection.sub.-- instance function. Similarly, path 10' has the message identified as: charging.sub.-- transaction.sub.-- req (session.sub.-- id, network.sub.-- user, connection instance.sub.-- request). As with path 10, path 10' indicates that the MA.sub.ci 144 has taken responsibility for the second network connection.sub.-- instance by selecting an appropriate charging agent (CA.sub.ci) 152 that takes responsibility for charging for the second network connection.sub.-- instance.

Detailed Description Text (60):
In fulfilling these two network connection.sub.-- instances, the following paths and associated messages are defined: 12) connection.sub.-- instance.sub.-- req (session.sub.-- id, connection.sub.-- user, connection.sub.-- instance.sub.-- request) and 12') connection.sub.-- instance.sub.-- req (session.sub.-- id, connection.sub.-- user, connection.sub.-- instance.sub.-- request). In the case of path 12, the MA.sub.ci 136 takes responsibility for initiating a connection.sub.-- instance request that is to be fulfilled by sending a message to an appropriate and selected fulfillment agent (FA.sub.ci) 156 of the connection instance layer 140. The FA.sub.ci 156 takes responsibility for fulfilling the connection.sub.-- instance function or functions associated with this particular network connection.sub.-- instance and initiates one or more agent systems 66 for accomplishing the necessary function or functions Likewise, along path 12', a fulfillment agent (FA.sub.ci) 160 of the connection instance layer 140 takes responsibility for fulfilling the second of the network connection.sub.-- instances.

Detailed Description Text (62):
In taking responsibility for handling of the booking associated with the first network connection.sub.-- instance, the CA.sub.ci 148 is involved in sending a message to a booking agent (BA.sub.ci) 170 of the connection instance layer 140, which is defined as: 15) debit (session.sub.-- id, connection.sub.-- instance.sub.-- request.sub.-- connection.sub.-- user.sub.-- booking, amount). This message indicates that for the current session as described, an amount is to be booked or debited to a particular account, which is, typically, the connection.sub.-- instance user's account and in which the BA.sub.ci 170 takes responsibility for accomplishing the functions associated therewith. Likewise, for the second network connection.sub.-- instance, a similar message is provided along path 15', namely: 15') debit (session.sub.-- id, connection.sub.-- instance.sub.-- request.sub.-- connection.sub.-- user.sub.-- booking, amount). This message is received by the booking agent (BA.sub.ci) 174 of the connection instance layer 140.

Detailed Description Text (64):
With regard to handling how charges are reported to an end user, in accordance with the foregoing example, there are two network connection related charges, two network

connection.sub.-- insta[●]ce related charges and one serv[●]e related charge and one service instance related charge. The present invention is adaptable or flexible in being able to provide multiple separate entries to the end user in conjunction with charging the end user or, alternatively, one consolidated entry or a further function could be applied to the multiple charges to generate a new composite charge.

Detailed Description Text (66):
With continued reference to FIG. 3F, the MA.sub.c 184 also takes responsibility for initiating a message from the connection layer 130 to the service instance layer 120 in light of the completion of the particular service instance. More specifically, the MA.sub.c 184 sends a message along path 17 to the fulfillment agent 132 (FA.sub.si). This message is defined as: 17) connection.sub.-- released (session.sub.-- id). Similarly, the MA.sub.c 192 initiates a message along path 17' to the FA.sub.si 132, which is defined as: 17') connection.sub.-- released (session.sub.-- id). The FA.sub.si 132 takes responsibility for handling the information related to the release of each of the two network connections for the current session that is identified in the respective messages. Additionally, the FA.sub.si 132 takes responsibility for reporting service instance resource usage for the current session to the MA.sub.si 116 in accordance with the message: 18) service.sub.-- released (session.sub.-- id, service.sub.-- instance.sub.-- resources). Next, a message along path 19 is provided: 19) charge.sub.-- transaction (session.sub.-- id, service.sub.-- instance.sub.-- resources). This message is sent to the CA.sub.si 124, which takes responsibility for charging appropriate accounts based on resource unit usage in the service instance layer 120 and based on predetermined rules or algorithms. The CA.sub.si 124 is also responsible for using agent systems to accomplish these functions including the determination of the amounts to be booked. In that regard, along path 20, a message is sent defined as: 20) debit (session.sub.-- id, service.sub.-- instance.sub.-- request.sub.-- user.sub.-- booking, amount), the BA.sub.si 128 takes responsibility for debiting the amount to the appropriate account based on the content of the informational elements in the message. Similarly, along path 21, the proper account is credited for the particular service instance in accordance with the following: 21) credit (session.sub.-- id, service.sub.-- instance.sub.-- request.sub.-- user.sub.-- booking, amount). The data and/or information associated with this message is used by the BA.sub.si 186 in crediting the appropriate provider account for the service instance that was just delivered.

Detailed Description Text (68):
In continuing with the explanation of the present invention, the foregoing general example is applied to a specific service instance application. Specifically, a video on demand service is presented as an example in which the user requests a movie. In this example, the provider of the service instance and the provider of the network connection.sub.-- instances are separate business entities. The user has chosen to pay for each and any service, service instance, connection and connection.sub.-- instance charges by credit card.

Detailed Description Text (71):
In accomplishing these functions, the MA.sub.s 208 is involved with sending a message along path 2 to a fulfillment agent (FA.sub.s) 212 in the service layer, which is defined as: 2) service.sub.-- req (session.sub.-- id, service.sub.-- user, service.sub.-- request). In accordance with this message, the service user of the service layer is identified as making a service request with the current session.sub.-- id describing the particular service being requested as it relates to fulfilling a video on demand service. The FA.sub.s 212 takes responsibility for fulfilling the particular service instance and in selecting the appropriate management agent for delivery of the desired service instance (providing the movie selected by the user). In doing this, the FA.sub.s 212 takes responsibility for a message being sent along path 3 to a management agent (MA.sub.si) 216 in the service instance layer. This message is denoted as: 3) service.sub.-- instance.sub.-- req (session.sub.-- id, service.sub.-- user, service.sub.-- instance.sub.-- request). In accordance with this message, the MA.sub.si 216 manages the financial transaction and fulfillment of the service instance associated with providing the particular movie using the video on demand service. With regard to managing the financial transaction, the MA.sub.si 216 takes responsibility for sending a message along path 4 to a charging agent (CA.sub.si) 220 in the service instance layer, in accordance with the following: 4) charging.sub.-- transaction.sub.-- req (session.sub.-- id, service.sub.-- user, service.sub.-- instance.sub.-- request). The particular charging agent 220 is specified by the content of the informational element

service.sub.-- instance.sub.-- ca, which is part of the service.sub.--
instance.sub.-- request. Also part of the service.sub.-- instance.sub.-- request
informational element is a service.sub.-- instance.sub.-- user.sub.-- booking, which
identifies both the booking agent to be used and also provides booking information,
e.g., is a credit check required before delivery of this service instance. Next, the
CA.sub.si 220 takes responsibility for a message that is received by a booking agent
(BA.sub.si) 224 of the service instance layer along path 5 and which message is
defined as: 5) check.sub.-- credit (session.sub.-- id, service.sub.-- user,
service.sub.-- instance.sub.-- amount). The BA.sub.si 224 checks this service user's
credit for the amount identified in the message. If the credit is satisfactory, the
BA.sub.si 224 decrements available credit by this amount. In acknowledging the
credit check, the BA.sub.si 224 takes responsibility for sending a message back to
the CA.sub.si 220 acknowledging the credit check of the service user in accordance
with the message path defined as: 6) check.sub.-- credit.sub.-- ack (session.sub.--
id). This message indicates to the CA.sub.si 220 that, for the current
session.sub.-- id directed to the particular movie being requested, the user's
credit has been checked and found satisfactory for fulfilling or delivering this
particular movie. The CA.sub.si 220 then takes responsibility for sending a message
to the MA.sub.si 216, which message relates to accounting for the fulfillment of the
service instance (delivery of a movie using a video on demand service). More
specifically, along path 7, the following message is defined: 7) charging.sub.--
transaction.sub.-- ack (session.sub.-- id, service.sub.-- instance.sub.-- request).
With this message, the MA.sub.si 216 receives information directed to describing the
current session and the service instance request includes service.sub.--
instance.sub.-- request.sub.-- accounting.sub.-- rules, which specify how often an
accounting for this particular fulfillment must be made, such as upon completion of
the movie being sent to the user or periodically, based on time or service units and
the resource units for charging or rating that are required by the CA.sub.si 220.

Detailed Description Text (76):
Next, the MA.sub.c 282 initiates a message along path 9.4 to the fulfillment agent
(FA.sub.c) 288 in the connection layer. The FA.sub.c 288 represents a specific
network capable of fulfilling the connection request between the service instance
provider and the user. Likewise, for the second network connection, the MA.sub.c 284
is responsible for the initiation of a message to the fulfillment agent (FA.sub.c)
286 of the connection layer, which is capable of fulfilling the second connection
request between the service instance provider and the user.

Detailed Description Text (77):
Subsequently, the FA.sub.c 288 takes responsibility for fulfilling the necessary
dynamic connection or connections in the connection instance layer for providing
these particular service instances to the user. In the present example, a message
along path 9.5 is received by a management agent (MA.sub.ci) 236 in the connection
instance layer and is identified as: 9.5) connection.sub.-- instance.sub.-- req
(session.sub.-- id, connection.sub.-- user, connection.sub.-- instance.sub.--
request). In accordance with this message, the current session is described related
to providing the particular movie associated with the video on demand service, such
as the provider of the service instance or the user of the service instance together
with the identity of the connection.sub.-- instance user. The message also
identifies the request to be a network connection.sub.-- instance that is required
to deliver this particular movie. In accordance with this message, the MA.sub.ci 236
takes responsibility for initiating the appropriate functions to achieve the network
connections using the agent system or systems that communicate with this management
agent. Similarly, along path 9.5', defined as follows: 9.5') connection.sub.--
instance.sub.-- req (session.sub.-- id, connection user, connection.sub.--
instance.sub.-- request), a message is received by a further management agent
(MA.sub.ci) 240 of the connection instance layer. Like MA.sub.ci 236, the MA.sub.ci
240 initiates another network connection request that is required to deliver the
particular movie.

Detailed Description Text (80):
In fulfilling the necessary network connection.sub.-- instances, the following
messages are identified: 12) connection.sub.-- req (session.sub.-- id,
connection.sub.-- user, connection.sub.-- instance.sub.-- request) and 12')
connection.sub.-- req (session.sub.-- id, connection.sub.-- user, connection.sub.--
instance.sub.-- request). These messages are sent to fulfillment agents in the
connection instance layer, namely, FA.sub.ci 248 and FA.sub.ci 252, respectively.
Each of these messages provides information and data to these fulfillment agents
248, 252 to enable them to ascertain that a network connection is being requested.

These agents take responsibility for accomplishing the particular network connection functions that must be dynamically made in order to deliver the particular movie to the user. In accordance with fulfilling these functions, an internal, proprietary message is generated to connect the incoming channel from the server 228 through the network 232 to a specific channel to the user. These message paths for the two network connections of the present example are identified as 12.5 and 12.5'. As can be appreciated, a substantial number of functions and communications must occur in order to provide the necessary connections to the set top box 200 by the network 232.

Detailed Description Text (81):
With reference to FIG. 4C, the description of the example is continued with the video on demand service having been completed. Specifically, along paths 12.6 and 12.6', messages that originate in the service instance layer involving the FA.sub.si 224 are received by connection layer management agents MA.sub.c 282 and MA.sub.c 284, respectively, and which are denoted as: 12.6) release.sub.-- connection (session.sub.-- id) and 12.6') release.sub.-- connection (session.sub.-- id). Each of these received messages provides information to the respective management agents 282, 284 that the current session being described is now finished and these two agents must take responsibility for managing the release of the previously formed connections. In doing so, the FA.sub.c 288 and the FA.sub.c 286 receive messages initiated by the MA.sub.c 282 and the MA.sub.c 284 along paths 12.7 and 12.7', namely: 12.7) release.sub.-- connection (session.sub.-- id) and 12.7') release.sub.-- connection (session.sub.-- id). In accordance with these messages, each of the MA.sub.c 282 and the MA.sub.c 284 takes responsibility for managing the appropriate fulfillment agents which, in turn, assume responsibility for releasing the first and second network connections made with the necessary communications or other service-related networks because the delivery of the particular movie to the user has been completed. In that regard, the FA.sub.c 288 initiates a message along path 12.75 to the connection instance layer. That is, a message is received by the MA.sub.ci 236. Similarly, the FA.sub.c 288 initiates a message along path 12.75' to the MA.sub.ci 240 in the connection instance layer related to releasing the specific network connections that were utilized in delivery of the particular movie. These messages along paths 12.75 and 12.75' are defined as: 12.75) release.sub.-- connection.sub.-- instance (session.sub.-- id) and 12.75') release.sub.-- connection.sub.-- instance (session.sub.-- id). Each of these received messages provides information to the respective management agents 236, 240 that the current session being described is now finished and these two agents must take responsibility for managing the release of the previously formed connection.sub.-- instances. In order to do so, the FA.sub.ci 248 and the FA.sub.ci 252 receive messages initiated by the MA.sub.ci 236 and the MA.sub.ci 240 along paths 12.76 and 12.76', namely: 12.76) release.sub.-- connection.sub.-- instance (session.sub.-- id) and 12.76') release.sub.-- connection.sub.-- instance (session.sub.-- id). In accordance with these messages, each of the MA.sub.ci 236 and the MA.sub.ci 240 takes responsibility for managing the appropriate fulfillment agents which, in turn, assume responsibility for releasing the dynamically generated network connection.sub.-- instances, since the delivery of the particular movie to the user has been completed. The FA.sub.ci 248 and the FA.sub.ci 252 also take responsibility for generating proprietary messages that disconnect this previously provided communication paths through the network 232 along paths 12.8 and 12.8'. Referring next to FIG. 4D, messages are initiated by the FA.sub.ci 248 and the FA.sub.ci 252 that are received by the MA.sub.ci 236 and the MA.sub.ci 240 along paths 13 and 13' which are defined as: 13) connection.sub.-- instance.sub.-- released (session.sub.-- id, connection.sub.-- instance.sub.-- resources) and 13') connection.sub.-- instance.sub.-- released (session.sub.-- id, connection.sub.-- instance.sub.-- resources). In accordance with these messages, information is provided that the network connection.sub.-- instances are released and resource usage is reported to these management agents, who will take responsibility for managing the charging associated with the network connection.sub.-- instances that delivered the selected movie. In that regard, the CA.sub.ci 244 receives messages along paths 14 and 14' that are identified as: 14) charge.sub.-- transaction (session.sub.-- id, connection.sub.-- instance.sub.-- resources) and 14') charge.sub.-- transaction (session.sub.-- id, connection.sub.-- instance.sub.-- resources). In accordance with these messages, the charging agent 244 takes responsibility for determining and charging the amount for these network connection.sub.-- instances associated with the particular service instance. As part of this responsibility, the CA.sub.ci 244 is responsible for sending messages that are received by one or more booking agents. In particular, a booking agent (BA.sub.ci) 260 is responsible for functions related to the debiting of the user's account. In the present example, this involves a

credit card whereby the appropriate account in the credit card company 264 is debited for these network connection.sub.-- instances. Similarly, the booking agent (BA.sub.ci) 268 receives a message that results in the BA.sub.ci 268 taking responsibility for crediting the accounts receivable 272 of the connection.sub.-- instance (network) owner, based on data and/or other information for which the CA.sub.ci 244 takes responsibility. These messages are identified as follows:

Detailed Description Text (104):
With reference to FIG. 5, a further illustration is provided that summarizes certain information that is required by the agents of the four network layers, as applied to billing functions. In that regard, for each of the four layers, an information model is presented that identifies information/data required by these different agents. With respect to the service instance layer, the management agent (MA) receives information and/or data directed to the service instance relationship including the identity of the service instance user, the type of service, the provider of the service instance and a current description of the particular service instance, such as the movie selected using the video on demand service. The fulfillment agent (FA) of the service instance layer requires information related to the delivery of the service including the current session that describes the service instance to be provided, such as the particular movie to be delivered. The information/data required by this agent also includes the algorithm or rules necessary to accomplish the fulfillment. Additional information to the fulfillment agent in the service instance layer includes the identities of the user and the provider for the particular application instance. The charging agent (CA) of the service instance layer receives financial transaction data and information including the current session describing the service instance and a rating algorithm for use in charging for the service instance. Booking agents (BA) receive information related to debiting and crediting appropriate accounts including a description of the current session.

CLAIMS:

1. A method involving the supplying of services, comprising:

defining for analysis a network including four layers, including:

a service layer that defines an information model for management of a number of services available from a plurality of providers to a plurality of users;

a service instance layer that defines an information model for management of a particular service to a user and requests network connections to provide said particular service;

a connection layer that defines an information model for management of physical and logical devices and their interconnections within said network; and

a connection instance layer that defines an information model for management of connections in said network that are required to provide available services;

identifying functions to be accomplished using agent systems associated with said layers, said functions including managing a relationship between a user and a provider that is appropriate for one or more of said layers, fulfilling a capability to be provided to a user that is appropriate for one or more of said layers, determining an amount to be billed for a specific use of a capability that is appropriate for one or more of said layers and crediting or debiting an account that is appropriate for one or more of said layers;

associating with said functions a plurality of mechanized agents including a first agent having a predetermined function that is different from functions of each of said other of plurality of agents;

analyzing using said layers and said agents, in connection with making decisions related to arrangement and implementation of said agent systems, said hardware, said software and said support systems, said analyzing step further including:

allowing for said support systems to be technology and service application independent;

permitting interoperability between at least two of said hardware, software and

support systems that are involved with supporting different service applications;

permitting interoperability between said hardware and said software supplied by different vendors;

standardizing data and data formats necessary for initiating and implementing said functions;

reducing a number of said hardware, said software and said support systems that operation support personnel need to be trained upon; and

permitting coordination and cooperation among service and network providers for delivery of new services and new technology; and

implementing the supplying of a plurality of services using at least one of said agent systems, said hardware, said software and said support systems, said implementing step including formulating messages that include informational elements related to: a service request, a service instance request, a connection request and a connection instance request and in which each one of said requests includes at least one of the following: user booking data describing a booking to be used for a user; provider booking data describing a booking to be used for a provider; fulfillment agent data describing a fulfillment agent to be used for fulfilling said request; charging agent data describing a charging agent used in charging an amount associated with said request; description data describing said request; and accounting rules used in charging related to said request.

2. A method for facilitating the supplying of services using a network in which there are a number of service providers and in which there are a plurality of mechanized agents to take responsibility for the accomplishment of desired functions, a plurality of mechanized agent systems for accomplishing the functions initiated by the mechanized agents and with a plurality of messages being received by the mechanized agents in connection with providing the services, the method comprising:

initiating a request to a management agent using a control channel for a first service instance to be provided to a first user by a first service provider, said management agent being responsible for managing the relationship between the first user and the first service provider involving the delivery of said first service instance;

invoking a fulfillment agent a first time using said management agent and in which said fulfillment agent receives a first message that includes informational elements related to an identity of said first user and a description of the first service instance, said fulfillment agent being responsible for operations to be performed by one or more agent systems including at least a first function related to delivery of said first service instance to the first user;

invoking a charging agent a first time using said management agent and in which said charging agent takes responsibility for charging for said first service instance and in which said charging agent receives a second message that includes informational elements related to the identity of the first user and a description of said first service instance, and in which said charging agent delays complete charging for said first service instance until after said first service instance is terminated;

requesting a first component service instance using said fulfillment agent, and in which said first component service instance is involved with a second function, different from said first function, and with both of said first and second functions being needed to provide said first service instance to the first user;

providing said first service instance to the first user over a first service delivery channel in said network, different from said control channel, after said requesting of said first component service instance and after said invoking of said fulfillment agent and said charging agent said first time;

generating a termination request for terminating said first service instance;

invoking said fulfillment agent a second time after said generating step in connection with the termination of said first service instance and in which said fulfillment agent receives a third message that includes informational elements

related to the identit● of the first user and a descrip●on of said first service instance and in which said fulfillment agent takes responsibility for operations related to termination of said providing of said first service instance;

invoking said charging agent a second time after said step of generating said termination request for terminating said first service instance using one of said management agent and said fulfillment agent and in which said charging agent receives a fourth message that includes informational elements related to data based on the amount of use by the first user of said first service instance and charging parameters for use in determining charges for said first service instance including said providing thereof;

discontinuing use of said first service delivery channel in connection with said first service instance;

initiating a request to said management agent for a second service instance to be provided to a second user by the first service provider;

invoking said fulfillment agent a third time using said management agent and in which said fulfillment agent receives a fifth message that includes informational elements related to the identity of the second user and a description of said second service instance, said fulfillment agent being responsible for operations to be performed by one of more agent systems, including at least a first function, related to delivery of said second service instance to the second user;

invoking said charging agent a third time using said management agent and in which said charging agent receives a sixth message that includes informational elements related to the identity of the second user and a description of said second service instance;

requesting a second component service instance, different from said first component service instance, using said fulfillment agent and in which said second component service instance is involved with providing a second function, different from said first function, and with both of said first and second functions being needed to provide said second service instance to the second user by the first provider;

providing said second service instance to the second user after said requesting of said second component service instance and after said invoking of said fulfillment agent and said charging agent said third time;

generating a termination request for terminating said second service instance;

invoking said fulfillment agent a fourth time after said generating step in connection with termination of said second service instance and in which said fulfillment agent receives a seventh message that includes informational elements related to the identity of the second user and a description of the second service instance and in which said fulfillment agent takes responsibility for operations related to termination of said providing of said second service instance;

invoking said charging agent a fourth time after said step of generating said termination request for terminating said second service instance using one of said management agent and said fulfillment agent and in which said charging agent receives a eighth message that includes informational elements related to the identity of the second user, data based on the amount of use by the second user of said second service instance and charging parameters for use in determining charges for delivery of said second service instance and in which said charging agent is responsible for determining charges for said second service instance including said providing thereof;

wherein, for each of said first and second service instances, charging for said first and second service instances is pre-established so that the first and second users are not involved in negotiating charging terms with the first service provider in order to conduct said providing of said first and second service instances;

wherein said charging agent, together with its operational relationship involving said management agent and said fulfillment agent, are known and pre-established for charging for said first and second service instances before said first and second services instances are initiated by the first and second users, respectively;

wherein each of said management agent, said fulfillment agent and said charging agent is a mechanized agent and each communicates with a different one of said plurality of mechanized agent systems, said plurality including a first agent system communicating with said charging agent and in which said first agent system is modular wherein, when said first agent system is replaced by a second agent system, said first charging agent communicates the same informational elements to said second agent system as said first charging agent communicated with said first agent system;

wherein each of said management agent, said fulfillment agent and said charging agent is responsible for a predetermined function that is different from each predetermined function of each of the other of said management agent, said fulfillment agent and said charging agent; and

wherein each of said informational elements of each of said one through eighth messages is provided in a predetermined order and format acceptable to said agents and in which each of said management, fulfillment and charging agents initiates a predetermined response depending on content of said messages.

18. A method, as claimed in claim 2, wherein:

said step of requesting said first component service instance includes requesting a supplemental component service instance different from said first component service instance and in which said supplemental component service instance is involved with a third function, different from said first and second functions, and with each of said first, second and third functions being needed to provide said first service instance to the first user and in which at least one of said first component service instance and said supplemental component service instance is provided using a second service provider different from the first service provider.

20. An architecture for facilitating the providing of services using a network, comprising:

a network for providing available services to users, said network including support systems for supporting the providing of the services, said support systems having a plurality of agent systems and said network having a plurality of network systems including hardware and software required for proper network operation, said network further including a control channel for carrying a request related to a service instance to be provided to a user and a service providing channel, different from said control channel, through which a service instance is to be delivered; and

an operations gateway in operative communication with said network including said network systems and said agent systems, said operations gateway including a plurality of agents, said agents constituting an interface that takes responsibility for the accomplishment of one or more functions using said agent systems, said agents receiving messages from said agent systems, said network systems and others of said plurality of said agents, each of said messages including informational elements useful in providing the services;

wherein said plurality of agents includes a management agent, a fulfillment agent and a charging agent, said management agent being responsible for managing the relationship between service users and service providers including a first user, a second user and a first service provider, the fulfillment agent being responsible for operations to be performed by one or more agent systems including at least a first function related to delivery of said first service instance to the first user and a first function related to delivery of said second service instance, said charging agent taking responsibility for said first service instance and said second service instance and in which said charging agent delays complete charging for each of said first and second service instances until after each of said first and second service instances, respectively, is terminated;

first means for providing a first component service instance in which said first component service instance involves using said fulfillment agent and said first component service instance has a second function in connection with said first service instance, which is different from said first function, and with both of said first and second functions being needed to provide said first service instance to the first user;

second means for providing a second component service instance in which said second

component service instance involves using said fulfillment agent and said second component service instance has a second function in connection with said second service instance, which is different from said first function, and with both of said first and second functions being needed to provide said second service instance to the second user;

wherein said plurality of messages include:

a first message received by said fulfillment agent that includes informational elements related to an identity of the first user and a description of said first service instance and in which said first message is received using said management agent before completion of said first service instance;

a second message received by said charging agent that includes informational elements related to the identity of the first user and a description of said first service instance and in which said second message is received before completion of said first service instance;

a third message received by said fulfillment agent that includes informational elements related to the identity of the first user and a description of said first service instance and in which said third message is received in connection with termination of said first service instance;

a fourth message received by said charging agent that includes informational elements related to data based on the amount of use by the first user of said first service instance and charging parameters for use in determining charges for said first service instance including providing thereof and in which said fourth message is received in connection with termination of said first service instance;

a fifth message received by said fulfillment agent that includes informational elements related to an identity of the second user and a description of said second service instance and in which said fifth message is received using said management agent before completion of said second service instance;

a sixth message received by said charging agent that includes informational elements related to the identity of the second user and a description of said second service instance and in which said sixth message is received before completion of said second service instance;

a seventh message received by said fulfillment agent that includes informational elements related to the identity of the second user and a description of said second service instance and in which said seventh message is received in connection with termination of said second service instance; and

an eighth message received by said charging agent that includes informational elements related to data base based on use by the second user of said second service instance and charging parameters for use in determining charges for said second service instance and in which said seventh message is received in connection with termination of said second service instance;

wherein said charging agent, together with its operational relationship with said management agent and said fulfillment agent, are known and pre-established for charging for said first and second service instances before said first and second service instances are initiated by the first and second users, respectively;

wherein each of said management agent, said fulfillment agent and said charging agent is a mechanized agent and each communicates with a different one of said plurality of mechanized agent systems, said plurality including a first agent system communicating with said charging agent and in which said first agent system is modular wherein, when said first agent system is replaced by a second agent system, said charging agent communicates the same informational elements to said second agent system as said charging agent communicated with said first agent system;

wherein each of said management agent, said fulfillment agent and said charging agent is responsible for a predetermined function that is different from each predetermined function of each of the other of said management agent, said fulfillment agent and said charging agent; and

wherein each of said informational elements of each of said one through eighth

messages is provided in a predetermined order and format acceptable to said agent that receives said messages and in which each of said management, fulfillment and charging agents initiates a predetermined response depending upon content of said messages.

28. An architecture, as claimed in claim 20, wherein:

said plurality of agents includes a booking agent that receives a message from said charging agent, with said booking agent taking responsibility for debiting or crediting an account of the first user in connection with said first service instance.

30. An architecture, as claimed in claim 20, further including:

third means for providing a third component service instance in response to a message from said fulfillment agent and in which said third component service instance is involved with providing a third function, different from said first and second functions, and with each of said first, second and third functions being needed to provide said first service instance to the first user.

DOCUMENT-IDENTIFIER: US 5630127 A
TITLE: Program storage device and computer program product for managing an event driven management information system with rule-based application structure stored in a relational database

US PATENT NO. (1):
5630127

Detailed Description Text (171):
The first step is to look up the appropriate risk type identification rules for the event based on product types and other user defined criteria. Using these rules the risk types affected are determined and a separate exposure amount is created for each risk type. The results of these calculations are updated on the exposure database.

Detailed Description Text (183):
Datastore containing recurring and one-time events whose sources include user input, calendar triggers, market movement, revaluation of accounts notices (e.g., Mark-to-Market events) and CMIS transaction event triggers. Processes periodically examine this queue to complete calculations initiated by others.

Detailed Description Text (199):
A set of user defined rules that define the risk types whose exposure values will be updated by a particular CMIS event, the calculation to determine the exposure value and the object data required to calculate the exposure.

Detailed Description Text (217):
Exposure report events triggered by an exposure calculation, a user query request and/or calendar_event that meets the rule instance to automatically execute the exposure reporting process.

Detailed Description Text (219):
User defined rules used describing the format and event triggers to automatically initiate reporting of exposure data.

Detailed Description Text (240):
Datastore containing recurring and one-time events whose sources include user input, calendar triggers, market movement, revaluation of accounts notices (e.g., Mark-to-Market events) and CMIS transaction event triggers. Processes periodically examine this queue to complete Calculations initiated by others.

Detailed Description Text (252):
User defined risk reporting rules which specify the data, format and event triggers to automatically produce risk reports.

Detailed Description Text (318):
This process receives the results of queries/reports from the primary node, presents them to users, and stores the object instance data to the local database for Risk Analysis. Other activities can also be received from the host, including messages from other users, and messages from behavior rule (e.g., limit) processing.

Detailed Description Text (320):
Risk analysis allows business users to execute queries/reports against instance data received from the primary node after a query/report execution. The user can change object_instance values to perform "what if" analysis.

Detailed Description Text (326):
The Object Instance entity on the primary node stores all the values retrieved and calculated during the execution of queries/reports. These values are sent, through activity management, to the secondary nodes where the queries/reports were requested, and stored in this entity. Users can use these object instance values in performing risk and other "what if" analysis by changing the object instance values and running local queries/reports.

Detailed Description Text (328):
CMIS data entered by GRMS users to add, modify or delete user accessibly CMIS data (Includes GRM manually initiated events).

Detailed Description Text (342):
Data sent from the primary node to a secondary node including report output, object instance data for risk analysis, and message data from their users or from behavior rule (limit) processing.

Detailed Description Text (368):
The GRMS system is designed to respond to messages. Messages may come through CMIS (external system feeds, market data feeds), from users (queries and reports), or from scheduled events in the Event Calendar (automatic reports, behavior rules, historical risk calculations). Whatever the source of the message, these messages are stored in the GRMS Queue entity. The Message Routing Rule is used to help identify, based on the message id, how to construct the key into the Message To Object entity. Based on the Message ID and constructed key, the Message to Object entity is examined to find an Object. This Object is related to a Module through the Object To Module entity. This Module is then executed.

Detailed Description Text (369):
Exposure calculations are triggered by messages from operational systems and user requested events. The message is stored in the GRMS Queue. Based on the life cycle states defined in the Message to Object entity, and Object is found, which is related to a Module (through the Object To Module entity). This Module is executed to respond to this message.

Detailed Description Text (372):
Processing for queries and reports are triggered by an Event calendar message or a request from a business user. The message is stored in the GRMS Queue which is related to a Module (through the Object To Module entity). When executed, this Module will aggregate the appropriate exposure or probable loss and return it to the limit processor. If this limit has been exceeded, a message will be sent to a set of Employees indicating that a behavior rule has been violated.

Detailed Description Text (456):
--Relationship Type: USER DEFINED FACILITY.Identifies.Obj Instance

Detailed Description Text (457):
Relates object instances to USER DEFINED portion of CMIM key.

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DOCUMENT-IDENTIFIER: US 5604899 A
TITLE: Data relationships processor with unlimited expansion capability

US PATENT NO. (1):
5604899

Detailed Description Text (113):
After termination, the results of the inquiry loop are fed through signal bus 911 to
an abbreviated results compiling means 915 which orders the results according to
their level number and interrelation. By way of example, a first Level-2 inquiry may
produce intermediate answer, Ei-2a. That intermediate answer together with its
forward-connecting relation (RTN.sub.2) may produce a plurality of intermediate
answers at Level-3, namely, Ei-32a.1, Ei-32a.2, etc. Each of these Level-3 answers
may then result in a larger plurality of Level-4 answers (not shown) and so forth.
Likewise the Level-2 answer Ei-2b may produce a plurality of Level-3 answers,
Ei-32b.1, Ei-32b.2, Ei-32b.3, etc. Each of these answers is recorded as a paired set
of an entity class number ETN and an entity instance number EiN. The abbreviated
results are then expanded into user-understandable results by sending an entity type
number signal, sETN.sub.x to the entity definition means 950 and a corresponding
entity instance signal, sEiN to the entity storage means 920. In response the entity
storage means 920 then produces detailed information from the referenced entity
instances tables. Often, the database user may not wish to see all of the detailed
information within a row, but rather wishes to see only prespecified columns of the
referenced row and wishes the data to be displayed according to a predetermined
display format. The details filter 985 filters out information from undesired
columns and orders the remaining data according to a predetermined display format
selected by the user. The desired "real" information then appears in the selected
format on display means 990.

Detailed Description Text (114):
Referring to FIG. 10, it will now be explained how a single starting instance can
lead to the production of a large plurality of answers. A database user has a first
account number (instance I.sub.a/E1) from which the user wishes to find all persons,
groups or companies which are holders of that account, and once known, all other
accounts held by those persons, groups or companies; and further, where a person is
a member of a group or a group has many persons as its members or where a company
has subsidiary companies, the accounts held by these entities. As shown in FIG. 10,
the relationship instance I.sub.a/R1, has three tails, T1, T2 and T3, only one of
which will be active for a given instance of the head entity I.sub.a/E1. Tail T1
points to person instance I.sub.b/E2. Tail T2 points to group instance I.sub.b/E3.
Tail T3 points to company instance I.sub.b/E4. These instances of person, group and
company represent intermediate instances which lead to the desired answer, namely,
the accounts held by such persons. One person I.sub.b/E2, may hold many other
accounts as indicated by the multiple instances of the 's Holder relationship
instances, I.sub.i/R1, I.sub.j/R1, I.sub.k/R1, etc. Each of these relationship
instances has a corresponding account instance at its head (H) end. In FIG. 10,
these are I.sub.i/E1, I.sub.j/E1, I.sub.k/E1, etc. The rest of FIG. 10 is
self-explanatory. A person can belong to several groups and each of those groups may
hold several accounts. A group may have many members and each of those members may
have several accounts. A company may be a subsidiary of many other companies and
each of those companies can hold several accounts. Thus, the list of ending
instances shown in FIG. 10, I.sub.i,j,k/E1 -I.sub.x,y,z/E1, can be quite long
compared to the starting instance I.sub.a/E1 which started the inquiry.